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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/921,588 | 08/02/2001 | Bradley S. Withers | 5646/CMP/CMP/RKK | 9496 |

32588 7590 02/24/2004

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| EXAMINER | |
|---|---|
| SHAKERI, HADI | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3723 | |

DATE MAILED: 02/24/2004

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**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Paper No. 26

Application Number: 09/921,588
Filing Date: August 02, 2001
Appellant(s): WITHERS ET AL.

Keith P. Taboada
For Appellant



**EXAMINER'S ANSWER**

This is in response to the appeal brief filed December 01, 2003.

***(1) Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

***(3) Status of Claims***

The statement of the status of the claims contained in the brief is correct.

***(4) Status of Amendments After Final***

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

***(5) Summary of Invention***

The summary of invention contained in the brief is correct.

***(6) Issues***

The appellant's statement of the issues in the brief is correct.

***(7) Grouping of Claims***

Appellant's brief includes a statement that claims 1-27 and 30-39 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

***(8) Claims Appealed***

The copy of the appealed claims contained in the Appendix to the brief is correct.

***(9) Prior Art of Record***

| | | |
|---|---|---|
| 5,679,063 | Kimura et al. | 10-1997 |
| 5,816,900 | Nagahara et al. | 10-1998 |
| 5,433,650 | Winebarger et al. | 07-1995 |
| 6,139,406 | Kennedy et al. | 10-2000 |

***(10) Grounds of Rejection***

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-25, 30-33 and 35-39 stand rejected under 35 U.S.C. 103(a). This rejection is set forth in prior Office Action, Paper No. 18 (Kimura et al. in view of Nagahara et al.).

Claims 26 and 27 stand rejected under 35 U.S.C. 103(a). This rejection is set forth in prior Office Action, Paper No. 18 (Kimura and Nagahara further in view of Winebarger).

Claim 34 stands rejected under 35 U.S.C. 103(a). This rejection is set forth in prior Office Action, Paper No. 18 (Kimura and Nagahara further in view of Kennedy).

***(11) Response to Argument***

In response to the argument that Kimura and Nagahara cannot be combined because a) Kimura teaches use of at least one nozzle to dispense polishing fluid having a distribution of different concentrations across a polishing surface, and b) that Nagahara teaches applying polishing fluid through the pad and fails to suggest the polishing fluid may be applied through a nozzle. Regarding Kimura, col. 2, lines 25-28, discloses supplying a polishing solution having a common concentration thought at least one nozzle to be diluted along a radial direction in order to improve flatness across the entire surface of a wafer by properly adjusting polishing operations along the radial direction on the polishing cloth to achieve a uniform pattern of material removal suitable to a particular set of polishing conditions, col. 6, lines 13-17 or that the structure offers desired localized areas of the surface of the object can be polished to different degrees. Regarding Nagahara, it discloses polishing apparatus and method whereby fluid is delivered at dissimilar flow rates and pressure across a wafer to remove the material form the wafer surface based on the location on that material relative to the center of the wafer.

In response to Appellant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on

combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to the argument that the Examiner has to consider the prior art in its entirety and that Kimura teaches – "fine tuning the rate of removal of the surface material of the object by adjusting the concentrations of the polishing solution...," in column 2, line 11-13 and thus teaches away from utilizing a polishing fluid with a uniform concentration, it is noted that Examiner does consider the prior art in its entirety but disagrees with the Appellant's conclusion, in that distribution of different concentrations of the polishing fluid may also be obtained by adjusting the flow rates, well within the knowledge of one of ordinary skill in the art, further as evident by Nagahara.

Regarding the argument with respect to claims 8 and 12-14, Examiner disagrees that all the limitations of the claims are not met, since independent control of each nozzle is taught by Kimura (See Kimura col. 5, lines 20, and 53-55) through needle valve and since both references teach adjusting the parameters depending on the target material, thus adjusting the parameters through dissimilar flow rates dependent on workpiece would meet embodiments in which one flow rate is at least 1.15 times the second flow rate or between 1.2 to 20 times the second flow rates.

Regarding the argument with respect to claims 16-18, Appellant again makes the same argument that the limitations of a firs means and a second means for providing polishing fluid at a first and a second rate, wherein the first means flows a greater volume, is not met by the combined references, since the references cannot be combined, with which the Examiner disagrees as stated above.

Regarding the argument with respect to claim 17, Appellant again makes the same argument that the limitations of an independently controllable means, is not met by the

combined references, with which the Examiner disagrees since as stated above, Kimura, e.g., in column 5, lines 20 and 53-55, teaches controlling the supply volume for both water nozzle and solution supply nozzle by equipping the nozzles with needle valve, it is also noted that in column 6, lines 5-8, that the embodiment of Figure 8 for which both water and solution nozzles are provided with needle valve, may comprise several nozzles, thus the argument that an independently controllable means is not met by the references is not persuasive.

Regarding the argument with respect to claims 23-25, Appellant again makes the same argument that the limitations of a method that includes flowing polishing fluid onto a first portion of a rotating pad at a first rate and flowing polishing fluid at equal concentration on a second portion at a second rate different from the first rate, is not met by the combined references, since the references cannot be combined, with which the Examiner disagrees as stated above.

Regarding the argument with respect to claim 30, Appellant again makes the same argument that the limitations of first nozzle over a first zone defined on a rotating pad by a volume of polishing fluid provided, and at least a second nozzle over a second zone defined on a rotating pad by a volume of polishing fluid provided that is different that the first volume having the same concentration, is not met by the combined references, since the references cannot be combined, with which the Examiner disagrees as stated above.

Regarding the argument with respect to claims 31-33 and 35-39, Appellant again makes the same argument that the limitations of first zone defined on a rotating pad having a first volume of polishing fluid disposed thereon, and a second zone defined on the rotating pad radially inward of the first zone and having a volume of polishing fluid disposed thereon that is different that polishing fluid of the same concentration disposed on the first zone, is not met by the combined references, since the references cannot be combined, with which the Examiner disagrees as stated above.

Regarding the argument with respect to claims 36-38, Appellant again makes the same argument that the limitations of each nozzle being independently controllable, and wherein one flow rate is at least 1.15 times the second flow rate or between 1.2 to 20 times the second flow rates, are not met by the combined references, with which the Examiner disagrees since as stated above, Kimura (See Kimura col. 5, lines 20, and 53-55) teaches independently controlling the supply volume through needle valve and since both references teach adjusting the parameters depending on the target material, thus adjusting the parameters through dissimilar flow rates dependent on workpiece would meet embodiments in which one flow rate is at least 1.15 times the second flow rate or between 1.2 to 20 times the second flow rates.

Regarding the argument with respect to claims 26 and 27, Appellant makes the argument that the limitations of claims 26 and 27 are not met since Winebarger does not teach or suggest flowing a polishing fluid at a first location at a first rate and flowing a polishing fluid of equal concentration at a second location at a second rate that is different that the first rate, with which the Examiner disagrees since Winebarger is utilized to teach a method for polishing a substrate in which the polishing parameters are adjusted during the polishing based on monitored values, not to teach adjusting the polishing parameters by providing slurry at dissimilar flow rates.

Regarding the argument with respect to claim 34, Appellant again makes the same argument that the limitations of claim 34 are not met since Kennedy does not teach or suggest different volumes of polishing fluid of equal concentration disposed on a polishing pad when contacting the wafer, with which the Examiner disagrees since Kennedy is utilized to teach the structure in which the fluid delivery lines are disposed within the arm, not to teach adjusting the polishing parameters by providing slurry at dissimilar flow rates.

In conclusion the argument that the references cannot be combined amounts to the references being nonanalogous art. In this case both Kimura and Nagahara are in the field of applicant's endeavor and both are pertinent to the particular problem with which the applicant was concerned, i.e., uniform polishing across a wafer in a chemical mechanical polishing (CMP).

It is further noted with respect to apparatus claims, i.e., 1-22 and 30-39, in response to Appellant's argument that fluid is delivered with a common concentration and with dissimilar flow rates, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Hadi Shakeri
Patent Examiner
Art Unit 3723

February 12, 2004

Conferees
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Alan N. Shoap

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